

Switching Electronics for Space-based Telescopes with Advanced AO Systems, Phase I

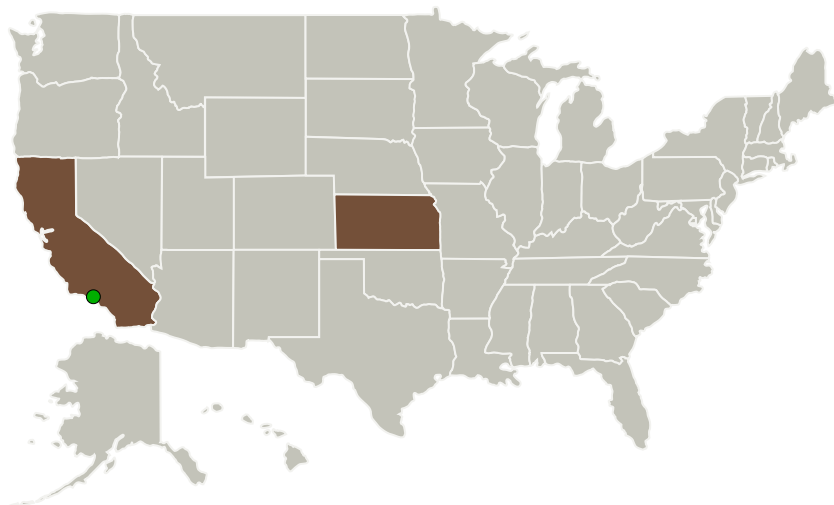
Completed Technology Project (2015 - 2015)



Project Introduction

One preferred approach to directly image an exoplanet is to build a space-based telescope instrumented with advanced internal coronagraphs, where deformable mirrors (DMs) with high actuator counts are essential for achieving very high contrast detection. When actuator quantities are in thousands, the electrical driver poses a fascinating challenge for space-based applications, where power and mass are limited, and reliability is extremely important for the mission life-time in space. What proposed is a 64x64 channels of monolithic multiplexed driver, which can deliver voltages up to 300 V to all the actuators at different time slots. Thus the required operation power is greatly reduced. By vertically integrating the application specific integrated circuit (ASIC) driver with a DM, the potential wiring failure will be eliminated. Furthermore, radiation resistance will be emphasized during ASIC design.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Sunlite Science & Technology, Inc.	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Lawrence, Kansas
● Jet Propulsion	Supporting Organization	NASA Center	Pasadena, California



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Primary U.S. Work Locations

California

Kansas

Project Transitions



June 2015: Project Start

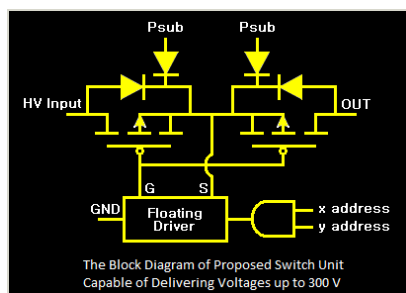


December 2015: Closed out

Closeout Documentation:

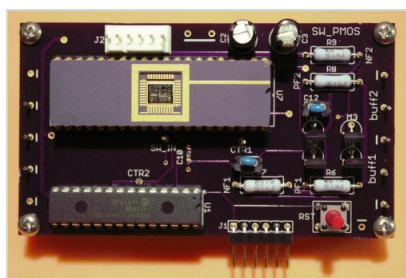
- Final Summary Chart(<https://techport.nasa.gov/file/139530>)

Images



Briefing Chart

Switching Electronics for Space-based Telescopes with Advanced AO Systems Briefing Chart (<https://techport.nasa.gov/image/136703>)



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Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System